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A NATURALIST'S RAMBLE IN SWEDISH LAPLAND.

By SUTTON A. DAVIES.

STARTING from Mo, on the Ranen Fjord, a little town some forty miles south of Bodö, in Norway, lat. 66°, on Aug. 14th, 1891, we crossed the mountains by an easy pass, and found ourselves that same evening at the upper end of one of the great Swedish chains of lakes. Next morning, Aug. 15th, we started early, and rowed down this lake, the Ovre Vmand, and at about 8.30 a.m. we were in Swedish waters, the boundary between the two countries being defined by a clearing in the birch-clad slopes that skirted the lake. In places the water was dotted with countless islands, between which there was a considerable current, the Vmea Elv being a river of fair size. Here we observed a good many Redshanks, *Totanus calidris*, a few Greenshanks, *T. glottis*, some Sandpipers, *T. hypoleucus*, and Divers (*Colymbus* sp.), which we saw both flying overhead and paddling about in little parties amongst the islands. A long row brought us at midday to a house, whence we were to cross over country to another chain of lakes. Here we saw a smoke-begrimed stuffed Tern hanging suspended from the ceiling. On our way across the mountains we observed a few broods of "Ryper," or Willow Grouse, Wheatears, and one or two dead Lemmings, although no traces of live ones.

After a night's rest, somewhat disturbed by mosquitoes, in a Lapp "hjorte," or conical hut, made of birch-bark and boughs, we found ourselves, on Aug. 16th, on the shores of a large birch-fringed lake. The Lapps were away fishing in the only boat,

but our Swedish guides, after a long search, discovered the party, and we crossed the lake for another tramp. During this walk we saw a good many "Ryper," a flock of Redpolls (*Linota*), and a few Teal on the mountain swamps. Four Buzzards were seen in all; I believe that the Rough-legged Buzzard, *Buteo lagopus*, is the commonest Scandinavian bird of prey. But night surprised us when some six miles from our stopping-place, and we were in the midst of a thick, tangled willow swamp, wet through with crossing the river which ran through it, one of the tributaries of the Vindel Elv, and with no boat to take us down it. So we made our way up into the birch above, and having kindled a roaring fire, we camped out for the night.

Aug. 17th. A thick hoar-frost had fallen during the night, but it soon melted, and our men having found the boat, which they missed the night before, we proceeded down the river, which for a northern stream has here an extremely flat and sinuous course between high banks fringed with dense willow scrub. Here we passed a good many Teal and Wigeon, including a few "flappers" that sought refuge under the banks. Presently we entered a small lake which seemed a paradise for ducks, so many did we see. Within the twenty-five minutes which we took to cross this lake, whose weedy bottom seemed a good feeding place for trout, we saw perhaps fifty ducks, mostly Wigeon, Teal, and Wild Duck, though perhaps there were other species among them. Several Sandpipers were running along the shores, and a Snipe was seen. Passing down a few runs of broken water, we reached a larger lake, where we saw more ducks, amongst which we distinguished some Goldeneyes. We saw one or two Buzzards, and a bird on the water, which, from its size, was probably a Goose of some kind. We arrived in the evening at a settlement of Swedish Bonders, which boasted a chapel; here I saw two Divers flying high in the air and uttering their harsh cry, "kakera," which is said to predict rain.

Aug. 18th. We were now in the zone of firs, and, as the Red-throated Divers predicted, the rain fell. The mosquitoes were very troublesome. Several Divers (*Lomme*) and Wigeon were seen; but fishing, and not travelling, was the order of the day. Sandpipers and a Kestrel were the only other birds seen, and I did not observe any Fieldfares, which hitherto were seen daily. House Martins build here in great numbers, as the Swedish

houses have convenient eaves for their nesting. In an uninhabited country like this, where the Lapp "hjorte" affords no accommodation to the birds, they must necessarily be very crowded for nesting room.

Aug. 19th. We proceeded on our journey down the Vindel Elv, shooting several rapids and carrying over others. Birds seen on the way were a great many Wigeon and Teal, Sandpipers, a Ring Ouzel, a pair of Tufted Ducks, a Greenshank, a Buzzard, and high up above the rapids, where at mid-day we stopped to fish, an Eagle. Here, under the eaves of a house, I counted no less than forty-seven House Martins' nests, whose occupants seemed to be employed in mobbing a Kestrel. A fresh egg lay broken on the ground below. We now walked a few miles to the great Vindel Lake, where we saw over thirty Ducks and many Fieldfares in the fir-woods. A long row in the chilly evening brought us to the Swedish house of a wealthy Lapp who had "retired." The northern lights were very fine as we went in. The gentleman had just been taking up his fishing-nets; amongst the catch were Perch, Roach, Jack, Gwyniad, and Turbot. Perch-skins are dried and used for clearing the coffee in Sweden. After much mock-ceremony we retired to the state-room of the house, and woke next morning (Aug. 23rd) to attempt a breakfast off rancid roach, and high exceedingly hard and dry reindeer-flesh. We saw Magpies here for the first time. A walk over the table-land between two river-valleys gave us some fine "multer" or cloud-berries, and also a sight of two Cranes, which rose in the distance from a marshy pool, and flew slowly off, making a harsh trumpeting noise. We also saw a Great Grey Shrike, *Lanius excubitor* pursuing two Fieldfares, two Buzzards, and three Siberian Jays—birds whose flight and gait proclaimed them to be of the Jay tribe, though their plumage would lead one to suppose otherwise. I saw a Lesser Spotted Woodpecker, and the only Owl seen the whole time, at our sleeping place for the night.

Next morning we started for a walk through monotonous and uninteresting fir-woods. The path was exceedingly hard to find in places—in fact, there was really no path at all. We put up a hen Capercaillie, that was sitting on a fir tree; she flew to the ground and ran off very quickly. Only one Ryper was seen, but as we descended a slight hill, a doe Reindeer with her two fawns came trotting quietly through the forest right up to the path; on

seeing us they made a sudden swerve and galloped back through the wood. A buck Reindeer was observed by the other two members of our party. A great many Blue and Coal Tits were to be seen on the fir trees. The sharp scream of a Buzzard and the hoarse croak of a Raven were heard. At about 11 a.m. we came to a reed-fringed lake, Moskjaure, which we crossed, and then proceeded over some thickly-wooded undulating ground till we saw below us the great Udjaure, the middle section of the great Horn Lake. The scenery was extremely beautiful; the shores of the lake were covered with sweetly-perfumed shrubs. Having found a boat, we rowed across the lake to a farmhouse on an island, Norrholm, where we had our mid-day rest. Here there was a long narrow plank beneath the eaves which supported the House Martins' nests. We were shown the skull of an enormous Pike taken from the lake. In front of the house large families of ducks were playing and bathing in the water most unconcernedly. Besides these one frequently saw an old duck surrounded by ten to thirty young ones; on the approach of the boat they would all get up to the surface, and half-flying, half-paddling, make a furious rush along the top for some yards, when they would settle down till the boat catching them up again made another "flap" necessary. At about three o'clock we started again to row to Arjeplong, the capital town of the district of Lappmark, a county as large as Yorkshire, passing several divers and families of ducks on the way. We arrived at Arjeplong, a little village with a church, a post-office, a guest-house, and a tendsman, or policeman, in time for an evening's Grayling fishing, when I observed a good many families of ducks and some immature Goosanders (*Fiskände*) on the Homafran. Four days were spent fishing at Arjeplong on the rapids with which the Shellefteo river connects the Homafran and the Udjaure.

Aug. 22nd. One of the inhabitants went out shooting and bagged eight birds—two immature Wigeon, a female Goosander, and the rest Red-throated Divers. As usual, I saw a great many families of ducks, and a good many Hooded Crows and Magpies. A pair of Buzzards were always to be seen round and about the rapids near the village, and a pair of Great Grey Shrikes. Lemmings swarmed, the dogs killed a great many daily; 1891 was what is called a "Lemming year." On one of the islands in between the series of rapids was a fine young buck Reindeer,

which had come there in the early summer, and now seemed afraid to recross the rapids.

Aug. 23rd. An expedition of seven guns set out to-day to shoot Mountain Hares on the islands, but they only got one! A Buzzard had a great quarrel with the Hooded Crows on the island in front of our quarters. During a long row I saw a great many Divers and Wigeon; some of the "flappers" I pursued in the boat, but without success.

Aug. 24th. A very wet day; saw a Merlin and many Divers (Lomme). On another island was a very familiar young Reindeer that insisted on accompanying me across the rapids, even trying to get into the boat. I saw a Lemming swim across the very swiftest part of the rapid in the streak of smooth just before the first broken water.

Aug. 25th. There were a great many ducks on the water to-day. The Buzzards were screaming very excitedly from a pine tree near the first rapids. In one of the shops here hung the skins of two Wolverines that were trapped near the rapids last winter.

Aug. 26th. A very stiff breeze carried us right up the Homafvan to Jackvik at the upper end, a distance of some forty miles. The only birds seen were Black-throated and Red-throated Divers, one Great Northern Diver, and a few Ducks.

Aug. 27th. We went up to fish in the Summselet, a little lake which forms one of the series between the Seddvajaure and the Homafvan. Four Buzzards appeared and always kept together, perpetually uttering their sharp screaming cries. We again saw Sandpipers, which we had not seen since the 19th, a great many Divers and Ducks, and a flock of seven Wild Geese, which rose from a little lake by which we reached our fishing. Into the Summselet the Shelleftoe Elv falls in two fine "fosses," and it likewise empties itself into the Homafvan by two long rapids. Above the two waterfalls Grayling do not occur, Trout and Char being the only fish. Our four friends, the Rough-legged Buzzards, kept meeting us all day long. As we returned at night laden with spoil, we put up a great many Teal from the willow-swamp by the lake-side.

Aug. 28th. Another angler had come to the Summselet to-day, in the shape of a fine Otter that had selected the top of one of the lower rapids for his "cast." In the island between the two streams I saw a party of three Siberian Jays eating

whortle-berries. I also surprised a Kestrel feeding on a young Fieldfare; a strong breeze was blowing, and a large flock of Fieldfares and Redpolls passed overhead in great confusion. The Buzzards were seen again, and the "rainbirds" were flying high, calling "kakera." When about two miles from home we were caught in a terrific hail-storm accompanied by thunder, lightning, and fierce gusts of wind; in the midst of it all I saw three Red-throated Divers flying round and round, evidently enjoying it.

Aug. 29th. We again saw the inseparable four buzzards, and also several Dippers, Sandpipers, and Divers.

Aug. 30th was spent in an investigation into the houses and stores. In one of the three farmhouses which constitute Jackvik was a manufactory of glue from Reindeers' hoofs and of lime from Reindeers' horns. We bargained for the skins of Grey Squirrels and sinews of Reindeers. The islands which lie in front of the house are said to be a great breeding-place for ducks; certainly we saw a good many broods of flappers about them. The commonest duck about Jackvik, our host tells us is the Teal (Krekke). Capercaillies' tails are used for brushes, and we saw great quantities of them in the storehouses. The House Martins were still in the nest, but the arctic summer was so late that a great supply of insect-food was still to be found; one of the party saw an actual rise of May-fly on Aug. 16th. The Great Northern Diver occurs here, but not commonly. I have not seen any Cuckoos here, but our host tells me they are plentiful in summer; the Swedes call them "gauke," the same word as our "gowk."

Aug. 31st. We left Jackvik, and by an alternate series of walks and rows, broken by spells of fishing and visits to Lapp huts, we made our way to the first "Fjallstuga," or mountain-refuge, supported by Government. Buzzards, Divers, Sandpipers, and Wigeon were the commonest birds. One Lapp hut we visited boasted a cat, said to be very expert in drawing Char out of the water. At the Fjallstuga were five young Foxes, which appeared to be crosses between the Red Fox and the Arctic Fox; four were very timid and kept chained up, but the fifth was the pet of the house and seemed to take the place of a dog; he was great friends with the cat, with whom he kept up a continual round of play: a more amusing or active animal cannot be imagined. May-fly were still rising to-day, though in small numbers.

Sept. 1st. The Martins were still in the nest here. A very

sharp frost last night froze the water in the buckets. A continual mewing cry was heard over the lake, which was enveloped in a thick mist—the cry of some duck, perhaps Wigeon. Passing a Buzzard, more Wild Duck, and several Divers, we crossed the arctic circle at Sillvjouk where there was once a silver mine. We fished with success at the Seddvastrom, where an Osprey was seen fishing. The second Fjallotuga was reached, and Sept. 2nd gave us another half-walk, half-row, with fishing at mid-day, to the third and last Swedish Fjallotuga. This was reached by traversing several lakes and their connecting streams, and a sinuous, sluggish river, where I saw some nets in which a young Red-breasted Merganser, *Mergus serrator*, had been entangled. Here we met some Norwegian bear-hunters; they had not yet found any traces of Bears, but had just seen a large Eagle. Fresh snow had fallen on all the mountains round.

Sept. 3rd. In the window at Merkenis were a great many annuals growing—stocks, everlasting-flowers, and tomatoes. A hard walk over the pass through a snow-storm was unproductive of birds, except "Ryper," Wheatears, and a Greenshank; and at 12.30 we crossed the boundary into Norway, eventually to descend to the Salten Fiord *en route* for Bodö and England.

AN INVESTIGATION INTO THE VARIATIONS OF THE VIPER IN GREAT BRITAIN.

By G. A. BOULENGER.

A FEW years ago* I drew the attention of the readers of 'The Zoologist' to the great amount of variation presented by the Common Viper or Adder, *Vipera berus*, in the scaling of the head. Characters which for many years had been almost universally accepted as of sufficient importance for instituting a distinct genus (*Pelias*) proved, on investigation of a large series of specimens, to be inadequate even for specific diagnosis. The subject, which had been discussed by Lataste and Tourneville,† has since been more fully dealt with by Camerano, in his Monograph of the Snakes of Italy,‡ who goes so far as to lower

* 'Zoologist,' 1885, p. 373.

† Bull. Soc. Zool. France, 1879, p. 132; and 1881, p. 38.

‡ Mem. Accad. Torin. (2), xxxix., 1888.

the continental *Vipera aspis* to the rank of a mere subspecies of *V. berus*. Although the facts of the case are correctly stated by the distinguished Italian zoologist, I do not think herpetologists are at all likely to agree with his conclusions; the more so as I fear a similar treatment would necessarily apply to many other largely distributed species when we once undertake to test the constancy of technical characters on a very great number of specimens from various parts of their habitat. No single distinctive character, in the case of allied species, appears to be absolutely constant; combinations of characters seem to be all we have to fall back upon in such cases. That *Vipera aspis* should still be maintained as a distinct species I have no doubt. The large material which I have brought together, and which I am endeavouring to increase, justifies this assumption; for although no one of the three cardinal characters used for the discrimination of that species from *V. berus* is in itself constant, I have not yet come across a single specimen which I could not satisfy myself to belong, without doubt, to the one or to the other. What we are most in want of at present are accurate statistics showing the range of variation assumed by the species in any limited area. And I hope, by specifying the points which require investigation, to enlist the interest of those residing in districts where the Adder is abundant,—at the same time, by stating the results of my observations up to the present time, to satisfactorily answer some of the questions which have at various times been raised in the correspondence of this Journal.

1. HABITAT.—*Vipera berus* inhabits the whole of Northern Europe and Northern Asia, from Great Britain to the Island of Sachalin. In Scandinavia it reaches to 67° , in Western Siberia to 64° , in Eastern Siberia to 54° . It is found in France (as far south as 46° in the west, and also on the Central Plateau), in Belgium, Holland, Germany, Switzerland, Austria-Hungary, Bosnia, Italy as far south as the Gran Sasso. It is extremely scarce in the Jura, but common in the Alps, between 2500 and 9000 feet. Absent from the South of France and the Pyrenees, it reappears in the North-west of Spain (Asturias and Galicia). Eastwards it extends to Roumania, Southern Russia and Crimea, the Caucasus, the Kirghiz Steppes, and Turkestan.

The Viper, which is absent from Ireland and the Shetlands and Orkneys, occurs from the extreme North of Scotland to the

South Coast of England. It is very common in Surrey, Hampshire, and Dorsetshire, but rare in Cornwall. It has long been on record from the Isle of Arran, and, as my friend Mr. W. Eagle Clarke kindly informs me, from Skye and Lewis (Martin, 'Description of the Western Islands' [1695], pp. 37, 159); specimens from Islay and Mull, I am told by the same gentleman, are preserved in the Edinburgh Museum.

Are there any districts in Great Britain from which the Viper is absent?

2. SEXUAL DIFFERENCES.—It is of primary importance, when dealing with the varieties of this species, to discriminate the sexes, and nothing is easier. The males have the tail thicker, less gradually attenuate, and longer; its length is contained in the total from $5\frac{1}{2}$ to $7\frac{2}{3}$ times in the males, 8 to $9\frac{3}{4}$ times in the females. We shall see further on that the number of subcaudal shields is greater in males than in females.

3. SHAPE OF THE HEAD.—The head is always distinct from the neck, though often not more so than in the Common Snake, *Tropidonotus natrix*. This character is therefore worthless as a criterion for distinguishing the Viper from the harmless snakes. The snout is rounded, with obtuse angle all round, and never turned up at the end as is normally the case in *Vipera aspis*. In some specimens, however, from Spain and Central Asia, the upper edge of the snout, or canthus rostralis, is somewhat raised, the upper surface being slightly concave. I have not yet observed anything of the kind in British specimens.

4. SCALING OF THE HEAD.—A typical *V. berus* may be described as with three enlarged symmetrical shields on the crown, the syncipital shields, in addition to the supraocular shield, situated above the eye; these three shields are termed the frontal (the azygous anterior shield) and the parietals; between the frontal and the supraocular two or three scales form a longitudinal series. The rostral shield covers the vertical border of the end of the snout, and is just visible from above; it is followed by one or two small shields on the top of the snout, and separated from the nasal by a vertically elongated shield, the naso-rostral. The canthus rostralis is occupied by two shields, the canthal shields, the posterior of which is in contact with the supraocular. The space left between the shields above mentioned is covered by four to seven scales. On each side of the head eight or nine

labial shields border the upper lip; a series of scales borders the eye in front (præoculars), below (suboculars), and behind (postoculars); and two or three scales separate the præoculars from the nasal. In the following paragraphs we shall examine how far these characters are constant.

a. *The Syncipital shields.*—In British specimens they are nearly always well developed. In one specimen only (from Hampshire) I find the frontal much reduced and the parietals broken up into scales, the specimen in this respect agreeing with *V. aspis*. In two specimens (from Reigate) the parietals are very small. In five specimens (from Reigate, Hampshire, Somerset, and Morayshire), on the other hand, the frontal shield is so large as to be entirely, or nearly entirely, in contact with the supraocular on each side; and in others (from Hampshire) these shields are in contact posteriorly, or on one side only. The specimen from Morayshire, in which the frontal is not separated from the supraocular, is further remarkable in having the scales on the upper surface of the snout between the canthals fused to a single large shield, thus being the opposite extreme to the specimen from Hampshire in which the disintegration of the shields into small scales has reached its highest point. Any such extreme specimens, either in one or the other direction, are worth recording and preserving.

b. *The Rostral shield* is either as deep as broad, or its depth exceeds its width by one-third at the most.

c. Two is the normal number of *Canthal shields* on each side. I have, however, examined one specimen (from Sutherlandshire) in which they are fused to a single shield.

d. The number of *Labial shields*, not being always the same, has to be counted on both sides of the animal. In 35 out of 74 cases I find 8 shields, in 30 cases 9, in 4 cases 10, in 4 cases 7, in 1 case 6. Continental specimens have much more frequently 9 than 8 shields. *V. aspis* has from 9 to 11. Usually the fourth and fifth labials are situated below the eye, but in 15 out of 74 cases I find only the fourth below the eye, a character which has been given as distinctive of the Spanish form, in which, however, I have shown it is not constant.

It would be interesting to know whether specimens occur with as many as eleven upper labials.

e. The number of scales round the eye (præ-, sub- and postoculars) varies between 6 and 11 in British specimens, the two extreme numbers occurring only once in my lists, 8 or 9 being the usual number. In continental specimens I note 7 to 11 scales, usually 9 or 10. In *V. aspis* the number varies between 10 and 13.

As a rule, a single row of scales intervenes between the eye and the upper labials, but one specimen (from the Isle of Arran) has two rows on one side, as in *V. aspis*, and others have two series except just below the centre of the eye. I have also French and Norwegian specimens with two series of scales, either complete or interrupted by a single scale between the eye and the fourth labial. I would recommend special attention to this point, and the preservation of any specimen showing two series of scales between the eye and the labials.

f. Finally, the scales between the praoculars and the nasal are not unfrequently totally absent.

5. THE SCALING OF THE BODY.—The scales number 21 across the middle of the body. But there are exceptions. In one specimen from Petersfield I counted 23 scales, and in another from Scotland only 19. Two specimens from Norway with 19 scales are also preserved in the British Museum. Such exceptional specimens should be recorded and preserved.

6. THE VENTRAL SHIELDS.—In 37 British specimens I have counted 137 to 146 ventral shields (exclusive of the anal) in males, 139 to 154 in females. In foreign specimens 139 to 147 in males, 135 to 153 in females. The limit of variation on record (sexes not discriminated) is from 124 to 159.*

7. THE SUBCAUDAL SHIELDS.—These shields are usually in pairs, but it may happen that some are single. The number (counting each pair as one, and not reckoning the terminal, conical, or spine-like shield) is 35 to 40 in males, 28 to 35 in females, in British as well as in foreign specimens. In one male specimen from Petersfield I find as few as 33 shields, most of which are single. The number of subcaudals is stated, on reliable authority, to vary between 25 (♀) and 48 (♂).

8. THE COLORATION varies greatly, and, with the possible exception of totally black individuals, apparently irrespective of localities. Whitish or pale grey specimens, with black belly and jet-black dorsal zigzag band and spots, are males. Brown and brick-red specimens, with the markings of a more or less dark

* I have my doubts respecting a female specimen from Casaleone, Verona, recorded by Camerano (*l.c.* pp. 24, 25) as with 168 ventrals and 42 caudals. I suspect it to be a *V. aspis*, in which species the number of ventrals varies between 136 and 158 in the specimens before me, and the number of subcaudals between 32 and 38 (♀) and 37 and 48 (♂). The number of 178 ventrals given by Newman (*Zool.* 1869, p. 1660) is no doubt due to some error.

brown, are females. There are also brown males with the markings of an intense black, and grey males with brown markings. A very pretty colour-variety, which affects only females, is olive with brick-red band and spots. Some males have the lower surface of a pale greyish blue (*Coluber cæruleus*, Sheppard), with the outer ends of the ventrals and caudals black. Specimens with yellowish white chin and throat, which may be tinged with red, are females; males have the throat black, or whitish with the scales spotted or edged with black. In some Vipers the zigzag band is partly broken up into rhomboidal spots, but I have not yet seen or heard of British specimens in which it is entirely absent. Spanish and Italian specimens are known with a broad straight dorsal band, edged on each side by a lighter streak. The wholly black Vipers (*Coluber prester*, L.), of which two British specimens (Kent and Isle of Arran) are in the British Museum, are said to be usually females, and to bring forth normally-coloured young. However, black males exist, as testified by Jan and by Blum; the former author figures one from the Tyrol, the latter records another from Baden. An entirely black male, from Denmark, is in the British Museum, together with a female, from the same locality, which is black above and bluish grey beneath. J. Geithe (in A. B. Meyer's iv. Jahresb. d. Ornithol. Beobachtung. im K. Sachsen, 1889, p. 149) regards the statement that the so-called *V. prester* are mostly females as erroneous. According to his experience the deep-black Vipers are males; so-called black females are only of a very dark brown, showing more or less distinctly the black zigzag band. A female of the latter description produced in confinement 17 young, of which only one was black, and that one was a male. My own experience is that melanism has nothing to do with sexes, for, as stated above, I have examined perfectly black examples of females, as well as of males. Prof. Möbius has observed that in North Germany the black variety is, generally speaking, confined to fens, the brighter specimens to dry localities. Another variety (*Coluber scytha*, Pallas), black above and white below, is only known from Germany and Russia. Any notes on the variations in colour and markings will prove of interest, provided the sex of the specimens has been ascertained.

9. THE SIZE.—*Vipera berus*, according to some continental authorities, may reach a length of 39 inches (900 millimetres), although but rarely exceeding 2 feet. Mr. G. E. Lodge (Zool.

1887, p. 272) mentions a specimen, from near Dorking, 26 inches long. The largest British specimens in the Natural History Museum measure nearly 2 feet (590 millims.). It is often stated that females are larger than males, but this is not supported by the material before me. The young at birth measure 6 to 6½ inches.

No statements as to size should be accepted unless the specimens have been actually measured with a tape. The length of the tail should be given, and the sex identified.

In concluding I would urge on all who have an opportunity, to take note of anything concerning the habits, time of pairing and of parturition, number of young, food, &c. It is now known that, in addition to small mammals (mice, voles, shrews, moles) which form their ordinary diet, Vipers will take young birds from the nest, lizards, and Batrachians,—thus drawing, for their bill of fare, on the four classes of terrestrial Vertebrates. A specimen from Hampshire which I recently opened contained a shrew and a frog; and Dr. F. Müller, of Basle, found a Salamander (*Salamandra atra*) in one from the Alps of Switzerland.

BIRDS OF THE ISLE OF MAN.

By P. RALFE.

THE following notes on some Manx birds, the result of several years' observation, may be acceptable as relating to the Ornithology of a locality seldom mentioned in this journal. The fauna of the island, considering its isolated position and its relation to lines of migration, deserves more attention, I think, than it has yet received. It is observable that in Mr. Christy's Index to British local Ornithology, the Isle of Man is unrepresented. A list of Manx Birds, however, by Mr. P. Kermode, has been published in the 'Transactions of the Isle of Man Natural History and Antiquarian Society.'*

In the following pages I confine myself almost entirely to what has fallen under my own notice, and have aimed only at giving an idea of the more striking points in our local Ornithology. I may remark upon the absence or scarcity of some familiar

* A short article on the Birds of the Isle of Man will be found in 'The Naturalists' Note-Book for 1867,' a periodical in 4to, of which only three volumes were published, 1867-69.—ED.

English birds, the Carrion Crow, *Corvus corone*, is entirely replaced by *C. cornix*; the following species are absent:—Blackcap, Blue, Marsh, and Coal Tits, Jay, Nuthatch, Whinchat, Wood Warbler, Chiffchaff, Green Woodpecker, Barn and Tawny Owls. The Redstart, Creeper, Nightjar, Long-tailed Titmouse, Spotted Flycatcher, and Bullfinch are either very uncommon or of exceptional occurrence. The Goldfinch also has of late years become rare.

Almost all birds, *and their eggs*, are protected here by Act of Tynwald during the breeding season, and many are so protected all the year round.

MISSEL THRUSH, *Turdus viscivorus*.—The “Wood Thrush,” as it is locally termed, is now one of our most common and conspicuous birds, breeding freely in gardens and shrubberies, as well as in small plantations all over the country. In 1888 I saw a nest with eggs at Greeba, built on a ledge of rock about six feet from the ground. This position was the more singular as the rocky brow was in a plantation, and trees almost overshadowed it. Another was placed among the sticks of an old Magpie’s nest in a small tree. A third was on the woodwork of a disused mine-wheel.

RING OUZEL, *T. torquatus*.—Sometimes seen on passage, but does not breed in the Isle of Man.

DIPPER, *Cinclus aquaticus*.—Specimens are occasionally obtained, but it is not a very common bird, and it is difficult to say whether any pairs breed in the island.

WHEATEAR, *Saxicola œnanthe*.—The numbers breeding bear but a small proportion to the flocks which pass on migration. From the ‘Migration Report’ for 1885 it appears that 52 were killed or captured in one night in April at the ‘Bahama’ l. v., Ramsey Bay, and on the same night “great numbers” were reported at Langness, showing a movement along our eastern coast.

STONECHAT, *Pratincola rubicola*.—This is one of the commonest and most noticeable of our wild birds. It remains both summer and winter on our gorse-covered commons, on all the rough margins of our sea-cliffs, and the high sod-fences and selvages of uncultivated ground that often border our smaller roads. I have even seen it perched on the top of a tangle-stem sticking from the *débris* of Douglas beach.

SEDGE WARBLER, *Acrocephalus schænobœnus*.—This species

does not appear to have been previously reported in the Isle of Man, except at one of the lighthouses in a 'Migration Report.' I have seen it, however, on several marshy river-sides in the neighbourhood of Douglas.

LONG-TAILED TITMOUSE, *Acredula rosea*.—A few only have been obtained, and this species and the Great Titmouse are the only representatives of the *Paridæ* known to occur in the Isle of Man.

GREY WAGTAIL, *Motacilla melanope*.—Pairs may be found scattered along our stony streams in summer.

MEADOW PIPIT, *Anthus pratensis*, and Rock PIPIT, *A. obscurus*.—These two birds are very characteristic of Manx bird-life. The former breeds plentifully on our uplands, and is often the only bird observed along miles of grassy moorland. On our pastures and the grassy edges of the "curragh" or marsh-lands, it is equally frequent. The latter flits through the wildest recesses of the sea-coast, haunting cavernous solitudes, the vastness of whose scenery dwarfs it to the size of an insect, or it feeds among the cast-up wrack of the beaches, or upon the weedy surface of the tidal reefs frequented by Gulls and Sandpipers. Many a lovely sea-margin, sprinkled in early summer with the lilac snows of the vernal squill, finds one of its appropriate charms in the sportive flight and song of this little dun-coloured bird. The Pipits are here called "Tweet."

MARTIN, *Chelidon urbica*.—Usually selects sea-cliffs for nesting here; it is not a common species, but there are small colonies on several localities on the coast. Its habit is not invariable here, however, for I have seen the nest on houses at Douglas and at St. John's.

SAND MARTIN, *Cotile riparia*.—The sandy brows which for many miles form the northern coast-line of the island are riddled with the holes of Sand Martins. In the neighbourhood of Douglas it is uncommon; a small colony which inhabited a bank at the top of a quarry above the Harbour, above the salt-waters of which the birds were constantly hawking, seems to be extinct.

CHOUGH, *Pyrrhocorax graculus* (called "Caaig" on the west coast).—Still lingers in some wild localities. The only nest I have seen was built high up in a large sea-cave. In the particular locality where this was situated the birds have almost or altogether died out. Sir Wm. Jardine, in his 'British Birds,' writing of the former abundance of this bird in Man, remarks,

"We once procured nearly thirty in a forenoon"; for which wanton destruction Manx ornithologists owe him little gratitude.

MAGPIE, *Pica rustica*.—Very numerous here, and often nests at a comparatively low elevation in small plantations away from houses, two or three nests perhaps being in the same "orchard," and only ten feet or so from the ground.

JACKDAW, *Corvus monedula*.—Breeds very abundantly on the sea-coast, but is now becoming common in the towns also.

HOODED CROW, *C. cornix*.—Breeds on the sea-coast, frequenting the same locality year after year, and in lonely woodland in the interior, but there, I think, less commonly. "Fannag" is the Manx name for this bird, but it is now universally known as "Greyback." The Carrion Crow, *C. corone*, is unknown here.

ROOK, *C. frugilegus*.—In the neighbourhood of Douglas, I think, exceptionally abundant. In the spring of 1890 I noticed that a rookery at Lorn House, Castletown, had overflowed across the street to the chimney-stacks of a large house opposite, where two nests were built, on one of which a bird was sitting.

RAVEN, *C. corax*.—Certain situations are yearly occupied by the Raven. All the breeding-places known to me, except one, are in the sea-cliffs. The exception is a range of rocks terminating in an inland mountain, and commanding an extensive view, but with a high road and many houses near. At this place the exact site has been many times shifted, so that I have at one time seen four or five old nests (one not more than eight feet from the ground), but the locality is always occupied. It bears the Manx name, "Edd feeagh vooar" (i. e. Raven's Nest), which argues some antiquity for the station. A rock not far off has the name "Creggan y Annag" (i. e. Crow's Crag).

SWIFT, *Cypselus apus*.—Swifts are decidedly uncommon, though some are yearly to be found round the church towers of this town and also at Peel Castle.

LONG-EARED OWL, *Asio otus*.—This is the only Owl resident on the island, and is well distributed, if not very abundant.

SHORT-EARED OWL, *A. accipitrinus*.—Is not uncommon in winter. I have even seen eggs said to belong to this bird, and to have been obtained at Injebreck.

PEREGRINE FALCON, *Falco peregrinus*.—Inhabits several eyries on the coast. One of these, in the west, though constantly robbed, is yearly resorted to. In 1890 the eggs were laid on a

recess in a grassy brow at the top of a great precipice. Another nesting-place is in a wild and terrific situation on the east side of the island, in the thinly ivied side of a cliff, above an almost inaccessible strand, and a third in a very similar spot in the south.

KESTREL, *F. tinnunculus*.—Abundant in Man, frequenting the coast for breeding purposes. I have never heard of the nest being found in a tree or building here, and the eggs are always laid in a mere scraping on some rocky shelf, usually more or less shaded by ivy or other foliage, exactly as Sir W. Jardine has described the haunts of the bird in his district. The same deep gully or recess, with broken sides, is resorted to year after year.

SPARROWHAWK, *Accipiter nisus*.—Although, where a coast similar to ours occurs, the Sparrowhawk has been described as sometimes nesting on rocks, with us trees are always chosen. The bird is fairly distributed here.

CORMORANT, *Phalacrocorax carbo*, and SHAG, *P. graculus*.—Both these birds are common, especially the latter. The Shag breeds abundantly in some places, but not, so far as I have observed, in the interior of caverns, as described elsewhere.

GANNET, *Sula bassana*.—From May to September we frequently see Gannets off our coast, and no doubt they are common further out to sea at this season.

HERON, *Ardea cinerea*.—In almost every part of the island a Heron on the wing, or stationary among the tide-pools or by some reach in a lonely stream, is a familiar sight. They are to be seen at all seasons. On one occasion (Oct. 30th, 1890) I saw no less than eighteen together on the Santon cliffs. The Heron is known here as "Crane," or sometimes by the Manx, "Coar-ny-hastan" (Eel-crane).

SHELDRAKE, *Tadorna cornuta*.—Though not common, a few appear in certain localities in winter, and a pair is even said to have bred at Langness in 1891.

ROCK DOVE, *Columba livia*.—Formerly bred in the caverns along the coast, but now appears to be extinct.

COOT, *Fulica atra*.—In the neighbourhood of Douglas, at least, this is a scarce bird, although a few are resident on a pool at a little distance.

GOLDEN PLOVER, *Charadrius pluvialis*.—So far as I have observed, this is a winter bird only in Man, though suitable breeding-places are plentiful.

RINGED PLOVER, *Aegialitis hiaticula*.—The commonest of all our shore birds, abundant on sandy and muddy parts of the coast. On the gravel banks of the northern shores nests are frequent.

LAPWING, *Vanellus vulgaris*.—Though large flocks are seen in winter, the Lapwing breeds here in but small numbers, a few pairs only being settled here and there during the nesting season.

TURNSTONE, *Strepsilas interpres*.—Of rather uncommon occurrence. I have seen only one alive, in Castletown Bay.

OYSTERCATCHER, *Hæmatopus ostralegus*.—Called “Garey-vreck” by country people; is plentiful on our more open shores, and breeds on the northern coast in considerable numbers, and more sparingly in some other localities.

SNIPE, *Gallinago cælestis*.—A few Snipe certainly remain all the year round.

DUNLIN, *Tringa alpina*.—Though seldom found on the sands of Douglas, is common on the southern bays. Great numbers, in plumage changing to the summer red and black, may be seen on the northern sands in May, but do not seem to reside there in winter.

PURPLE SANDPIPER, *T. striata*.—During the last three winters a small party of these birds has frequented the same spot in Douglas Bay, with curious persistence.

COMMON SANDPIPER, *Totanus hypoleucus*.—A few pairs are scattered along our streams in summer, as on the Sulby, Santon Burn, and Glass, and in autumn may be seen with their broods at the mouths of burns on the sea-shore.

REDSHANK, *T. calidris*.—Frequent about Castletown in winter.

WHIMBREL, *Numenius phæopus*.—Small parties may be met with in May, on the shingle-beaches of both the northern and southern coasts, their fearlessness strongly contrasting with the shyness of the Curlew.

CURLEW, *N. arquata*.—Is abundant in winter, and even in summer flocks may be met with on the northern coast. A few breed, or did so a few years ago, on the elevated moorlands of the Rheeast; perhaps in other localities.

BLACK-HEADED GULL, *Larus ridibundus*.—Abundant from July to March; none seem to breed on the island, though I have seen numbers at Jurby at the end of May.

COMMON GULL, *L. canus*.—Occurs in the bays in small numbers in winter, a few being often seen with a large flock of

Black-headed Gulls or Herring Gulls. From the former they are easily distinguishable at some distance by the stouter build, deeper tint of the mantle, and more conspicuous white on the wing.

HERRING GULL, *L. argentatus*.—Breeds on most rocky parts of the coast, often in great numbers. Sometimes the nests are on rock-ledges, sometimes on steeply-sloping brows—in the latter case frequently under some small jutting point.

LESSER BLACK-BACKED GULL, *L. fuscus*.—A few to be seen at all seasons in the bays. It breeds in at least two colonies at the south; one or two are occasionally to be seen among the throngs of Herring Gulls at the nesting-places of the latter.

GREATER BLACK-BACKED GULL, *L. marinus*.—Single birds often appear for a short time.

KITTIWAKE, *Rissa tridactyla*.—There is a breeding colony on the southern coast.

RICHARDSON'S SKUA, *Stercorarius crepidatus*.—Occurs occasionally. Some years ago I saw one in Douglas Bay. An immature specimen was taken in a garden near Douglas in stormy weather in October, 1890.

MANX SHEARWATER, *Puffinus anglorum*.—A specimen was obtained on the south coast in the summer of 1890. This bird, though it obtained its name from its former abundance on the "Calf," has not, as is well known, been reported as breeding here for very many years.

RAZORBILL, *Alca torda*.—More widely distributed here as a breeding species than the Guillemot.

GUILLEMOT, *Lomvia troile*.—Breeds in abundance on the southern rocks.

BLACK GUILLEMOT, *Uria grylle*.—Breeds in several localities, though not in very great numbers. One of these places, though in a wild situation, is almost within a stone's throw of a town, and has been frequented for a number of years. In the beginning of September, 1890, one remained for a week or two in Douglas Bay. This bird was exceedingly tame, swimming unconcernedly among the pleasure-boats off the Promenade. It allowed rowers to come very near, and would even rise close to the same boat several times in succession. Under the clear water one could sometimes trace its dives for a considerable distance, the white wing-patches being very conspicuous. It uttered at times a weak piping cry. At the same season, in 1891, a single Black

Guillemot appeared again in exactly the same place, and behaved with the same tameness, though constantly chased by boatmen, and living amidst the noise and bustle of the "visitors' season."

LITTLE AUK, *Mergulus alle*.—On January 26th, 1890, one, seemingly just dead, was cast ashore at Onchan Harbour, near Douglas. In November, 1890, another was washed ashore at Peel.

PUFFIN, *Fratercula arctica*.—Great numbers breed about the Calf Sound.

RED-THROATED DIVER, *Colymbus septentrionalis*.—In September or October, 1890, one was seen swimming in Douglas Bay, and was eventually killed near one of the piers. This bird was in beautiful plumage, complete grey head and red throat, hardly spotted on the back. Several divers frequented the bay during the winter of 1890-91.

NOTES ON THE SEAL AND WHALE FISHERY, 1891.

BY THOMAS SOUTHWELL.

IT was my intention, having contributed these "Notes on the Seal and Whale Fishery" for ten consecutive years, to have given a summary of the results, and finally discontinued them; but the critical state of the Greenland Fishery renders the present time unfavourable for such a conclusion. It is probable that the Whaling trade from Peterhead is doomed to speedy extinction, and that, at the port which for so many years took the leading part in the Greenland Fishery, this once important industry will soon be only a tradition. As with a species, so with an ancient industry threatened with extinction, it seems highly desirable that the time and circumstances of such extinction should be chronicled, however imperfectly, and I am induced to record yet one more step of its downward course.

The want of success in recent years does not seem to arise entirely from the unsuitable character of the ice, or the prevalence of winds unfavourable to the fishery, although in both these respects there has been a singular run of ill-luck; nor does it arise from the oft-repeated but erroneous statement that the Whales have been driven farther north, where the ships cannot follow them, for the Whales have not altered their line of

migration, and the localities where they will be found at certain periods of the year are as well known now as in Scoresby's time ; nor are they on the point of extermination, as supposed by some, for during the past season a considerable number of Whales were seen in their old haunts in the Greenland Seas. The want of success is, I believe, mainly owing to the introduction of steam, which enables the modern ships to follow the Whales in localities where formerly they would have been safe from molestation ; the rattle of the screw also, which can be heard by the Whales for long distances, is now to them a well-known sound ; above all, the eagerness with which they are followed up—all the vessels consorting together—has at length rendered them so wild as to be practically unapproachable. Even now, however, it appears quite possible that a vessel approaching their haunts alone, and in the quiet manner which prevailed before the introduction of steam, might be rewarded by the success of old. Certainly the fishery appears to be in a hopeless condition at present in the old Greenland haunts ; but it is possible that a few years' rest might restore the confidence of the Whales, and that, if then pursued with due caution by a limited number of vessels, paying cargoes might again be made. The same applies with equal force to the Davis Straits Fishery.

Most of my readers have doubtless seen the Brothers Gray's pamphlet on the possibility of transferring the pursuit of the Whalebone Whale from the ice of the Northern Hemisphere to that of the Southern. It is a bold suggestion, and shows that the spirit of the Elizabethan mariners still animates their Victorian successors, and, if successful, one more cutting from the industrial parent tree will be engrafted on the Greater Britain at the Antipodes—let us hope to flourish with all the vigour which the lusty young stock can impart to it. I am informed that sufficient support has already been received to fit out one vessel, and that it is hoped a second will accompany her ; it therefore seems probable that, under a new Commander, the 'Eclipse,' which has so long taken the lead in the Greenland Fishery, will be the pioneer in a new enterprise in the distant waters of the Southern Hemisphere.

The past season at the Newfoundland Sealing has proved a very successful one, the total catch by the nineteen British vessels present amounting to 343,495 Seals against 209,000 in

the season of 1890. These, too, were very equally distributed, eleven vessels having more than 15,000 each, *viz.*, the 'Terra Nova,' 35,239; 'Neptune,' 33,875; 'Hector,' 31,379; 'Wolf,' 30,337; 'Greenland,' 25,907; 'Vanguard,' 22,306; 'Falcon,' 20,855; 'Esquimaux,' 20,563; 'Aurora,' 16,723; 'Polynia,' 16,535; and the 'Leopard,' 15,815. The remaining eight vessels averaged 9245 Seals each, and only three of these were poorly fished. The produce also sold very fairly, the oil producing £24 per ton, and the skins averaging about 5s. 3d. each. The passage out to St. John's is described as a very bad one, and the unfortunate 'Polynia' (to be again alluded to) seems to have had a particularly rough time of it. Good weather was experienced at first, but, about a week after leaving Dundee, Capt. Guy was steaming dead slow in a gale from the W.S.W., accompanied by a heavy head sea, and his ship labouring very much, when, just as he was changing the watch and while a large number of men were on deck, the vessel shipped a terrific sea and one of the men was killed almost instantaneously, ten others being more or less seriously injured. Capt. Guy is of opinion that the sea which struck the 'Polynia' must have been a tidal wave. The weather then moderated, and all the injured men did well, and were ready for work when the vessel reached the ice.

The young Sealing in Greenland again proved an absolute failure, owing to the severe frost which prevailed in the spring, and the total number brought in from both the old and young Sealing, by five Scotch vessels, was only 1560 against 6603 in the previous year. The Norwegians, I am informed, killed some 20,000 or 30,000 young Seals.

The total result of the Newfoundland and Greenland old and young Sealing, so far as the nine Scotch vessels were concerned, was 90,590 Seals (of these 89,030 were from Newfoundland, and were included in the total already given for that fishery), yielding 986 tons of oil (as against 54,686 Seals and 647 tons of oil in the previous season): these, at £24 per ton for oil, and say 5s. 3d. per skin, would probably realise about £47,444, against a similar estimate of £29,993 in the season of 1890. This excellent result, it will be observed, is due to the success of the Newfoundland voyage.

The Dundee fleet was reduced to nine this season by the withdrawal of the 'Earl of Mar and Kellie,' and of these the

'Polynia' was crushed in the ice. Only three vessels—the 'Eclipse,' 'Hope,' and 'Active'—left Peterhead, the sole representatives of a fleet of twenty-eight vessels which sailed from that port in the year 1859.

The chief characteristics of the Davis Straits voyage appear to have been a very stormy passage out, and the enormous quantity of ice on the West Coast of Davis Strait. The passage through Melville Bay was open, but the captain of the 'Esquimaux' states that, in his experience of twenty-three years, he had never come across so much ice in one season. The 'Chieftain' was seriously damaged on her voyage out, and was afterwards beset in Lancaster Sound, and, after seeing only two or three Whales, arrived home "clean." A worse fate befel the 'Polynia.' On the 10th of July, in the neighbourhood of Admiralty Inlet, working through the ice which a strong N.E. wind was drifting in against the land, just, as her Captain believed, as she was passing the last jam of ice which shut out his vessel from the open water beyond, she was caught by the stern between two floes, and crushed so badly as to render it impossible to save her. The crew, thirty-seven in number, took to the ice, and, about six o'clock on the morning of the 11th, the 'Polynia,' after thirty summers spent in the Polar Seas, went to her long resting-place under the ice of Lancaster Sound. On the same afternoon, to the great joy of the crew, who were on the broken ice twelve miles from the shore, the 'Maud' hove in sight, but was unable to reach them. Early on the morning of the 12th the 'Aurora,' a much more powerful vessel, came to their assistance, and speedily forced her way through the ice to their rescue. The crew was afterwards divided between the 'Maud,' 'Aurora,' and the 'Esquimaux,' and all eventually reached their homes in safety.

Only six Whales were captured in the Straits Fishery, two of the vessels returning "clean." Other Whales were seen, but not captured, the 'Maud' unfortunately losing two, the harpoons drawing after, twenty-one lines being carried out in one case, and thirty lines* in the other! A large number of Bears were killed in the Straits, and 569 White Whales obtained in Lancaster

* A whale-line is 120 fathoms long: this fish therefore took away 4 miles 160 yards of line, the great weight of which alone would draw the harpoon unless very firmly fixed.

Sound by the Esquimaux; 215 Walrus, two White Foxes and a few Esquimaux Dogs were also brought home by the different vessels.

The condition of the ice in the North Greenland fishing-grounds has so long been unfavourable for Whaling that it was thought surely this season a change must have taken place: buoyed by this hope, and tempted by the fabulous price which whalebone has reached, the bolder spirits determined to try once more. The result, to all but two fortunate exceptions, as will be seen, was nothing but disappointment. There was a splendid fishing-bight in lat. $78^{\circ} 40'$ off Prince Charles Foreland, and here all the Whales of the season were killed. On May 17th the 'Eclipse' killed her only Whale (a small bull, of 5 ft. 6 in. bone); on the 19th the 'Hope' met with the like fortune, her hauls being not much larger than that taken by the 'Eclipse'; and here also the 'Polar Star' and the 'Active,' both of Dundee, secured, the former six and the latter three, Whales. On the South fishing-ground there was an enormous accumulation of ice off the east coast of Greenland, and the ships lost the whole of the season steaming through the cracks and lanes, for a distance of 350 miles, with no result. The 'Windward' (which with the 'Eclipse' and 'Hope' formed the whole of the Peterhead fleet) returned with only 111 Seals, yielding two tons of oil. A considerable number of Whales were seen by the ships, but they were shy and unapproachable, the good fortune of the two Dundee vessels being probably accidental.

The total produce of the Scotch whaling voyage was seventeen Whales, producing 259 tons of oil and 8 tons 9 cwt. of bone. The small size of the Greenland Whales will be apparent when I state that the eleven only averaged rather less than 8 cwt. of bone each, whereas five of the Davis Straits averaged $16\frac{1}{2}$ cwt. each, the sixth being a sucker of 1 cwt. This is contrary to what was formerly the case, the Greenland Whales being accustomed to yield more oil and bone than those from the Straits; fish of 20 tons of oil and 1 ton of bone were not unfrequent.

The oil may be valued at £20 per ton, but it is difficult to value the bone as so much of it was under-sized; the present price of size bone (*i.e.* over six feet) is £2800, but fully 20 per cent. would be worth only £1400 per ton; perhaps, therefore,

£2520 per ton would be a fair average, and at this price the total product of the Whaling voyage would be about £26,000.

I have, as on previous occasions, to express my thanks to Capt. D. Gray and his son, Mr. R. Gray, of Peterhead, and Mr. D. Bruce and Mr. Kennis, of Dundee, for their kindness in supplying me with information; also to Mr. Walter Thorburn, of Greenock.

NOTES ON MARINE MOLLUSCA COLLECTED ON THE COASTS OF DONEGAL AND DUBLIN.

BY H. CHICHESTER HART, F.L.S.

(Continued from page 56.)

Psammobia tellinella, Lam.—Derry. Miss Honoria Galway presented me with a fresh specimen which she had taken at Magilligan.

P. ferröensis, Chemnitz.—Dublin and Donegal, common.

P. vespertina, Chemnitz.—Donegal: I have gathered two specimens (one fresh) on the White strand between Buncrana and Fahan. Near Galway, beyond Salthill, this species is not unfrequent.

Donax vittatus, Da Costa (*D. anatinus*).—Dublin and Donegal, common. One of the few species which comes ashore unbroken on a thoroughly exposed, oceanic, sandy coast.

Mactra solida, Linn.—Dublin and Donegal, common. This appears to be remarkably plentiful on the shores of Inch Island, Lough Swilly.

M. subtruncata, Da Costa.—Donegal: Kinnegar and Inch Island, Lough Swilly, not uncommon.

M. stultorum, Linn.—Dublin: very common. Donegal: locally abundant, as on Tramore strand, west of Horn Head, with *Lutraria elliptica*, and elsewhere.

Lutraria elliptica, Lam.—Dublin and Donegal, common.

Scrobicularia prismatica, Montagu (*Syndosmya*).—Dublin: South Bull and Portrane, sparingly.

? *S. nitida*, Müll.—Dublin, near Bald Doyle. I am not sure of the specimens.

S. alba, Wood.—Donegal: Inch Island, Lough Swilly.

S. tenuis, Montagu.—Donegal: Fahan and Inch Island, rare.

S. piperata, Bellonius.—Donegal: Doagh Estuary, Sheep-haven, and Inch Island, Lough Swilly, abundant. Dublin: a single valve at Portrane; on recently deposited mud between Baldoyle and Portmarnock, where it does not seem to have been known till lately, and is now frequent. Always on muddy ooze.

Ceratisolen legumen, Linn.—Dublin coasts, common. Donegal, frequent on the Lough Swilly shores, and I have gathered it westwards near Horn Head, and elsewhere.

Solen ensis, Linn.—Dublin and Donegal, frequent.

S. pellucidus, Pennant.—Dublin: Portmarnock and North Bull, but not common. Donegal: frequent, especially westwards, about Dunfanaghy and Breaghy.

S. siliqua, Linn.—Dublin and Donegal, abundant.

S. vagina, Linn. (*S. marginatus*).—Donegal, one specimen (perfect) was picked up by me on the Kinnegar strand, Lough Swilly. It has been stated that this shell occurs at the North Bull, but I never found it there, though I have repeatedly sought for it. A search is, however, never satisfactory, as it cannot be distinguished without some slight examination from the common razor, and the abundance of the latter may often conceal the rarer one.

Lyonsia norvegica, Chemnitz.—Dublin: formerly found on Portmarnock strand (Miss Willan). Derry: Magilligan (Miss H. Galway). Donegal: I gathered a single fresh valve on the White strand, Buncrana, Lough Swilly, and a broken one on Ballinstocker, in the same Lough.

Thracia papyracea, Poli.—Dublin: formerly common on the Velvet strand, Portmarnock (Miss Willan); one specimen there, 1881. Donegal: Abundant on the Kinnegar, Lough Swilly, and frequent elsewhere on Donegal coasts. Derry: Magilligan (Miss H. Galway). Var. *villosiuscula*, one specimen at Portmarnock.

Corbula gibba, Olivi.—Dublin and Donegal, frequent.

Mya arenaria, Linn.—Dublin: Howth, &c. Donegal: Inch and Buncrana, Lough Swilly.

M. truncata, Linn.—Dublin and Donegal, frequent.

Saxicava rugosa, Linn.—Dublin: abundant in the limestone near the village of Howth, and elsewhere. Donegal, frequent. Var. *arctica*, N. Bull, Dublin; Mweel Finn, Sheephaven, Donegal.

Pholas dactylus, Linn.—Dublin: Portmarnock, a single valve. Donegal: Kinnegar, Rathmullan (Mrs. Batt).

P. candida, Linn.—Dublin, a few valves on the strand near the village of Howth, and also, rarely, on the Velvet strand, Portmarnock. Donegal: White strand, Buncrana. I have noticed this species as occurring freely in Wexford. Near Teeling Bay, Donegal (Carrick), *Pholas* castings and borings are very plentiful in limestone rocks, sixty feet above the present sea-level.

[*P. parva*, Linn.—Dublin: formerly single valves were gathered at Portmarnock (Miss Willan).]

P. crispata, Linn.—Dublin: Portmarnock and Portrane, single valves.

Teredo navalis, Linn.—Derry: Magilligan. Miss H. Galway gathered the tube (apparently of this species) on the strand.

Class SOLENOCONCHIA.

Dentalium entalis, Linn.—Dublin: Ware Hole, Drumleck, Howth; dredged at Ireland's Eye.

Class GASTEROPODA.—Order CYCLOBRANCHIATA.

Chiton fascicularis, Linn.—Donegal: the Hassans, Mulroy Lake, in about five fathoms, brought up on rocks in blasting operations.

C. cinereus, Linn.—Dublin: amongst seaweed and shingle at the Ware Hole, Howth. Donegal: Marble Hill shore, near Ards; Drimnacraig, Fanet, &c.

(To be continued.)

NOTES AND QUERIES.

Irish Natural History.—Those who take an interest in Zoology in Ireland must have felt the want of some popular Journal, wherein the observations of naturalists resident in that country might be periodically reported, and a useful medium of communication established. We are glad to learn that at length this want is to be supplied. In April next, we understand, there will appear the first number of 'The Irish Naturalist,' which is described on a prospectus which has reached us as "a Monthly Journal of general Irish Natural History, and the official organ of the Roy. Zool. Soc. of Ireland, the Belfast Nat. Hist. Soc. and Belfast Nat. Field Club, the Dublin Nat. Field Club, and the Armagh Nat. Hist. and Phil. Society." It is to be edited by Messrs. George H. Carpenter, B.Sc., of the Science and Art Museum, Dublin; and R. Lloyd Praeger, B.A., Hon. Sec.

Belfast Nat. Field Club and Ulster Fauna Committee, and the prospectus gives the names of more than fifty naturalists resident in Ireland who have promised their support. It is to be published by Messrs. Eason & Son, of Dublin and Belfast, and the very moderate price of sixpence monthly should ensure it a wide circulation. A "Naturalist" column has also been opened in the 'Irish Sportsman,' a weekly journal circulating among a class with whom Natural History is usually popular, and Mr. G. Barrett-Hamilton has undertaken to edit this section of it, with the cordial support of other Irish naturalists. It will, it is hoped, be a means of encouraging the study of this subject in Ireland—a country where its knowledge is still far in arrear of the advantages for its cultivation. Communications may be addressed to the Editor, 'The Irish Sportsman,' 97, Middle Abbey Street, Dublin.

MAMMALIA.

Whiskered Bat near Scarborough.—A short time ago I received a bat, which, together with three others of the same kind, had been taken at rest behind some shutters at Willerby, near Scarborough, in the early part of October, 1891, and which did not appear to belong to any of the three species already recorded for this district. On examination it proved to be the Whiskered Bat, *Vespertilio mystacinus*, which, according to Messrs. Clarke and Roebuck, has only been recorded from one locality in Yorkshire, namely, Great Myton, a small village near Clitheroe. Probably, however, since the publication of their work, it may have been noted elsewhere in the county, but this appears to be the first recorded appearance at Scarborough.
—W. J. CLARKE (44, Huntriss Row, Scarborough).

Polecat in Merionethshire.—Since my previous note (p. 74) another Polecat has been killed, and sent to me from the same locality as those previously mentioned. This animal had only three legs, having probably been trapped on some previous occasion. There are two misprints in my last note on this subject. "A park-keeper on the same beat" should read "A fresh keeper," &c.; and, a little further on, "all three" should read "all these."—C. H. CATON HAIGH (Aber-ia, Penrhyneddraeth, Merionethshire, North Wales).

BIRDS.

Additions to the Birds of Donegal.—Since the publication of my notes on this subject, I have received the following additions from my friend Mr. Robert Norman, of Fahan. I insert them as I received them, and those who care to do so can add MS. notes to the original list in their proper places:—Fifteen to twenty years ago Quails were fairly frequent throughout the county. A Kingfisher was seen at Fahan (on Lough Swilly, east side), 1890; seven or eight years ago they were there always. Common Terns breed between the two embankments at Inch Island. Sheldrakes breed on Inch Island, Lough Swilly. A Great Northern Diver was shot

in the middle of August by Mr. Norman on Douglas Lake, in the west of the county (the locality where the Red-throated Diver breeds). The following ducks have been obtained about Fahan by Mr. Norman:—Wild Duck, Teal, Wigeon, Pintail, Shoveller, Scaup, Pochard, Goldeneye. The Bernacle Goose used to come to Fahan, but Mr. Norman never sees them now. Tree Creepers reside at Fahan, but are rare. Great Northern Divers never go up Lough Swilly as far as Fahan, but the Red-throated often does, and the Black-throated sometimes. Rough-legged Buzzard, *Buteo lagopus*, Gmelin.—A specimen of this rare British bird was obtained last November at Horn Head, by Mr. Gahan, a keeper. It has been preserved by Williams, of Dublin.—H. CHICHESTER HART.

Long-tailed Duck off Suffolk Coast in Summer.—A specimen of the Long-tailed Duck, *Harelda glacialis*, was shot at sea, off Thorpe, July 27th, 1891. This species is not a common visitor to this coast even in winter, and in summer is undoubtedly rare. The bird in question was a female: ovary healthy (apparently), with numerous small ova; crop and stomach filled with barley. The barley was washed out of a steamer sunk on the 'tail' of the Sizewell Bank, and was a great attraction to large flocks of "Black Duck," mostly Common Scoters, *Ædemia nigra*, with a few Velvet Scoters, *Æ. fusca*, among the common species. With the other diving Ducks that sought this land of plenty the solitary *Harelda glacialis* appeared. The specimen is a curious one, both in the colour and condition of the plumage. It is a pale variety, with somewhat thready hair-like feathers, presenting as a whole a very forlorn and woe-begone appearance. Head and neck as ordinarily described. Back and scapulars brown, with a broad edging to most of the feathers of dirty white, forming an irregular set of wavy transverse lines across the shoulders; those portions of the primaries that show when the wings are closed, showed over tail dirty white. Rectrices (or as much as is left of them) also white. Plumage worn and head bare. The pennaceous feathers with stumpy shafts and thready barbs of varying length, in some cases worn almost down to the shaft. This is particularly well seen in the tail-feathers; the shafts of some are broken off short, others are nearly their full length; the barbs are worn down to the shaft, particularly in the outer rectrices, and the barbules have entirely disappeared. This Duck had for some reason or other "missed" the last moult; the thready appearance of the plumage was no doubt owing to continuous wear and tear during some twenty-three months, and the pale coloration of the feathers may certainly be ascribed to the same cause. It would be interesting to know the cause of the non-moult; dissection in this case gave no clue, and the ovaries appeared perfectly healthy.—F. MENTWITH OGILVIE (Sizewell, Leiston, Suffolk).

Hybrid Teal and Wild Duck.—Capt. Brooke, 79th Highlanders, of Thornhill, Culter, Aberdeen, sent a bird in the flesh to Mr. R. Small,

Edinburgh, which was lately shot in Anglesea. It is a cross between a male Teal and a Wild Duck. Size of a Wigeon. Head, Teal and Mallard gloss. Crest on head ruddy brown, and patch on cheek behind and below the level of the eye lighter yellow-brown. Sides of head glossy green. Under-side of tail and half of body, Wild Duck; tail, Wild Drake, but central feathers only very slightly up-curved. Breast spotted like Teal. Bill more like that of a Wigeon in shape and size.—J. A. HARVIE-BROWN.

[This is the hybrid which in the earlier editions of Yarrell's 'British Birds' was described and figured under the name "Bimaculated Duck." We have lately heard of a second example, which was taken in the second week of January last, in the decoy belonging to Capt. E. G. Pretyman, of Orwell Park, Ipswich.—ED.

Heron catching a Rat.—I am aware that Herons catch Common Rats, having, on more than one occasion, seen full-sized examples of *Mus decumanus* taken from the stomachs of these birds; but it was not until lately that I saw the feat of capturing a Rat by a Heron accomplished. On Jan. 24th, looking from my study window, about midday, I saw an immature Heron standing in a dyke about 80 yards off in the meadow. Suddenly it made a desperate pounce, began struggling with something, and finally scrambled out of the dyke on to the meadow, holding a full-grown Rat by the neck between its mandibles. After getting some 20 yards from the dyke it let the Rat drop, and away it made for the ditch, the bird following it in clumsy style, head down like an angry goose. I took up my binoculars, and watched the affair with great interest. The Rat gained the side of the ditch, the Heron flew into the water and stood statue-like for a few seconds, then another flutter and plunge at something running along the dyke side, and again the Rat was between the bird's mandibles. This time the Heron seemed fatigued with the weight of the Rat, but floundered out of the ditch holding its captive firmly, and walked into the meadow about 50 yards from the ditch. By this time the Rat was dead, and the Heron, without letting it touch the ground again, dexterously worked it through its mandibles until the head was in its mouth; then it attempted to swallow the Rat head foremost, but a big Rat is not an easy morsel even for the expansive throat of a Heron. Its efforts were most ludicrous, and excited the attention of a flock of Gulls which were bathing on the partially flooded meadow, and for a few minutes wheeled round and round the Heron. Soon several Hooded Crows gathered to the spot, and alighted within a few feet of the big bird; they seemed to watch it with curiosity and amazement, as the Heron turned round in its efforts to swallow the Rat, which by this time had slipped about half-way down its throat, leaving the hind legs and long tail dangling from the bill. The Crows kept hopping round, with their heads sagaciously cocked on one

side, croaking to each other. The Heron seemed much annoyed by their pertinacious attentions, and stalked, stumbled, and fluttered to the far end of the meadow, where he disappeared into another dyke, closely attended by the officious Hooded Crows. The next day, at the same hour, the bird returned to the dyke, but a stupid neighbour must needs come out and discharge his gun at the Heron, and naturally it has not again visited us in the daytime.—H. W. FEILDEN (West House, Wells, Norfolk).

[An amusing observation, by the late Frederick Bond, of a Heron killing and swallowing a House Rat, may be found in Harting's 'Sketches of Bird Life' (Allen and Co., 1883, pp. 268, 269). Dr. Patrick Neill, of Canonmills, near Edinburgh, had a pair of tame Herons in his garden, and told Selby that he had seen the cock bird "fell a Rat by one blow on the back of the head, when the Rat was munching at his dish of fish." Ill. Brit. Orn., vol. ii., p. 13, note.—ED.]

Chiffchaff wintering in Somerset.—On Dec. 27th, 1891, a warm sunny day, at South Cadbury, in Somersetshire, I observed a little bird flitting rapidly among the boughs, and picking off the small flies which swarmed about the twigs of a hazel bush. I took it to be a Willow Warbler, but thinking it might turn out to be something even more unusual than that, with a snap shot I managed to secure it. On examination, its dark legs showed it to be a Chiffchaff. Montagu saw this species several times in winter in Devonshire; and Mr. Howard Saunders states, in his 'Manual of British Birds,' that "a comparatively small number occasionally pass the winter in various sheltered portions of our islands, especially in Cornwall." This example from Somerset may perhaps be worth recording among your notes. On my return to town I took the specimen to the Natural History Museum, and it is now being preserved for the national collection.—ROBERT H. READ (2, Queen Square Place, Westminster).

Unusual Nesting of the Chiffchaff.—Under this heading Mr. Allan Ellison writes, in 'The Zoologist' for December, 1891, that he found a nest of the Chiffchaff fully three feet from the ground. Although I have never found one so high up as this, I may state that in the locality where I obtained the bird referred to in the foregoing note I found the Chiffchaff very plentiful during the previous breeding season. On the morning of Whit-Monday, May 18th, 1891, I found no less than six nests of this bird, and one the previous evening, all containing eggs except one. In one of these nests the eggs were spotted with pale rusty red, resembling a common type of Willow Warbler's egg. Four of the nests were placed in the banks of hedgerows, generally on a tussock of coarse grass; two were in low brambles, about eight inches from the ground; and one was in a bunch of brambles overhanging a ditch, about two feet six inches from the bottom of

the ditch. In Scotland I have found the nests and eggs of the Willow Warbler in the boughs of a young fir tree, about eighteen inches from the ground, and in a hole in a wall more than two feet from the ground. Also the nest of the Common Wren among the slender topmost twigs of a young hawthorn bush, about eight feet from the ground. — ROBERT H. READ.

Curlews Migrating. — While standing in the garden here, on the morning of the 18th January last, I heard a familiar cry overhead, and on looking up saw a couple of Curlews, *Numenius arquata*, flying towards the north. I have never noticed these birds about here before, but there had been a strong gale blowing the previous day, which may account for their presence.—HORACE TERRY (Burvale, Walton-on Thames).

Further remarks upon Grey Shrikes. — While thanking Mr. J. Backhouse for his remarks (Zool. 1891, p. 310) on this subject, I should like to point out that the object of my notes and enquiries (Zool. 1890, p. 27; 1891, p. 187) was not the determination of the specific or non-specific character of *Lanius major*. This question seems to me to be settled. *L. major* interbreeds with *L. excubitor*, and intermediate forms are found; it can therefore only be considered as a local race, or a subspecies at the most. A very fit case for a trinomial in fact. Mr. Backhouse's notes seem to confirm my view, previously expressed (Zool. 1890, p. 27), that the specimens of *L. major* procured in Britain do not (usually at all events) agree with the description of the adult given in the books, since he, like myself, "has no recollection of having seen a specimen with a white rump." Our experience as to the darker coloration of the upper parts generally of this form (than of *L. excubitor*) also agrees. Prof. R. Collett has noted that in a female *L. major* rather darker than her mate (*L. excubitor*) the rump was "very little lighter than the back," and the pure bred *L. excubitor* to which it was paired had a rump very nearly pure white ("Ibis," 1886, p. 30). Also, Mr. F. B. Whitlock has kindly written me word of a Pallas' Shrike with "not the slightest trace of white on the secondaries," procured near Nottingham recently, in which the rump and upper tail-coverts are certainly nothing approaching white; the whole bird is rather smoky, and perhaps these parts are a trifle paler than the back." With regard to this point I feel confirmed by the further observations and enquires which I have been able to make in the view I have been inclined to take for some time (and have previously expressed), viz. that *L. major* (usually at all events) has a grey, and not a white, rump. I cannot quite follow Mr. Backhouse when he writes of a specimen, examined by him, which he supposes might be a hybrid between *L. major* and *L. homeyeri*. Such a hybrid, if it existed, would surely differ little from the typical *L. excubitor*; since *L. homeyeri* (itself an intermediate

form between *L. excubitor* and *L. leucoptera*) has a good deal more white on the secondaries than *L. excubitor*, while *L. major* has none. But I believe there is not much chance of *L. major* and *L. homeyeri* interbreeding, as their normal breeding ranges do not appear to overlap. It is apparently quite *possible*, however, for Prof. Collett has noted ('Ibis,' 1886, p. 30) an example intermediate between *L. excubitor* and *L. homeyeri* (nearer the latter than the former), procured at Thronjem on May 1st, 1881; and I may mention, for what it is worth, that I have a skin of *L. homeyeri*, received from a dealer, who was positive about the locality, labelled Archangel. Here I suppose it would meet *L. major*. Here Collett, also (*op. cit.*), gives *L. homeyeri* as occurring occasionally in Northern Europe. I have a skin, marked on one of the late Herr Möschler's labels " *L. homeyeri*," which is not of that form at all, but is intermediate between *L. excubitor* and *L. major*; it has a rump rather paler than these intermediate birds usually have, and, like Mr. Backhouse's example, is quite unmarked on the under parts. In *L. homeyeri* the rump is nearly, if not quite, white. If there are many similar specimens to this, labelled in the same manner, they will doubtless cause misconception in some cases. How this bird came to be in South Russia in May, as its label indicates, it is difficult to understand. If it was about to breed, then the interbreeding which Mr. Backhouse hints at can of course take place in Southern, as well as in Northern, Europe. But in that case we get a great confusion of the local races which Mr. Seeböhm has set out in a most instructive account of our Grey Shrikes ('Siberia in Asia,' p. 243, footnote), and Herr R. Collett in his paper in 'The Ibis' (*ut sup.*). But it really seems almost impossible to assign exact ranges to the races. Herr Collett mentions a male procured at Hamar, on Nov. 8th, 1885, which is "hardly distinguishable" from a female of *L. borealis* from Nevada (March 28th, 1868), save for the short basal white mark on the secondaries, a character, he adds, "perhaps never met with in the true *L. borealis*." And he quotes Mr. Seeböhm ('Ibis,' 1880, p. 115) for a bird from Amoor which was indistinguishable from *L. borealis* (of North America). The only conclusion to which it seems possible to arrive is, that there is one species of Great Grey Shrike which ranges over Northern and Central Europe, Northern Asia, and the northern part of North America, and branches off into forms known as *L. excubitor*, *L. major*, *L. homeyeri*, *L. leucoptera*, *L. mollis*, and *L. borealis*; that some of these races interbreed with their neighbours, and that they occasionally appear (perhaps wander) out of their proper ranges. From Herr Collett's observations it appears that a union of two Grey Shrikes (forms unknown), on the Dovre Fjeld, may result in the production of, apparently, typical males of *L. excubitor* and a typical female of *L. major*. A bird, of which the sex was unfortunately not ascertained, but which was probably a young female, was killed close to Banbury, on Dec. 23rd, 1891, and has come into my

possession. In this specimen the white patch on the secondaries is exposed to a considerable extent by moving the tips of the superincumbent coverts slightly to one side; the whole of the upper parts have a brownish tinge, especially noticeable on the sides of the face, and the under parts are very much marked with semilunar dark lines. Apart from the white on the secondaries, it might be said to approach *L. borealis* very slightly in colour.—O. V. APLIN (Bloxham, Banbury, Oxon).

Serin Finch in Devonshire.—So far as I am aware the first example of the Serin obtained in Devon was caught on Nov. 29th last, between Exmouth and Budleigh Salterton, by an old birdeatcher. It was in company with two Linnets, which were also taken. On going to the nets the birdeatcher was surprised to see a bird, which he at first took to be a hen Siskin; but on closer inspection it turned out to be a bird with which he was not acquainted, and which he called a "foreigner." A day or two after it was shown to me, and I expressed the opinion that it was a Siskin. I purchased the bird and despatched it for inspection to the Editor, who confirmed this view. It was evidently not an escaped bird, as on its being put into a cage it did not seem at home, like most recaptured ones become, but fluttered about and tried to regain its liberty, and would not feed; moreover, its plumage was quite uninjured. The previous occurrences of the Serin in England are but few; about a dozen only have been obtained, one of which was taken in the adjoining county of Somerset. The bird has been set up for my collection.—W. E. H. PIDSLEY (Fair Bank House, Polsloe Road, Exeter).

Raptorial Migrants in East Anglia.—In addition to those already recorded (p. 29) the following raptorial migrants have occurred:—Two immature Peregrines, a male from Boxford and a female from Lakenheath, both of which I saw in the flesh at Bury on Dec. 23rd; an immature White-tailed Eagle (of course announced in the local paper as a Golden Eagle), shot at Rushbrooke on Jan. 1st, which, by the kindness of the owner, I was permitted to examine in the flesh; and a young Merlin, shot near the barracks at Bury, about Jan. 18th. A Rough-legged Buzzard was trapped, on Jan. 7th, at Six-Mile Bottom, in Cambridgeshire, about eight miles west of the Suffolk border, and was offered to me; but as the captor reported it to be alive and almost uninjured, I placed him in communication with an ornithologist who has long made living raptorial birds a special study.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Iceland Gull near Aldeburgh.—During the hard weather prevailing at the commencement of the new year an Iceland Gull, *Larus leucopterus*, was noticed about Thorpe-mere, near Aldeburgh, and was finally shot on Jan. 7th, 1892. The bird had not acquired the adult plumage, and is probably one that has moulted at least twice, i. e. not less than a second

year's bird. Weight, 1 lb. 10 $\frac{1}{2}$ oz. Length, 22 $\frac{1}{4}$ in. Wing, 16 $\frac{1}{2}$ in. Sex (by dissection), male. The stomach contained remains of a small fish. Glaucous Gulls can hardly be called rare along this coast, almost every winter bringing reports of birds seen or killed, most of the specimens being immature birds; but the Iceland Gull is undoubtedly much less frequently met with, and probably most of the notices of Iceland Gulls *seen*, and not killed, would be more correctly referred to *L. glaucus*. I am not aware that an Iceland Gull has been killed on any part of our sea-board recently, and I only know of one other previously obtained on Thorpe-mere.—F. MENTEITH OGILVIE (Sizewell, Leiston, Suffolk).

Black Redstart in Lancashire.—On Oct. 25th last I came across a Black Redstart, *Ruticilla tithys*, on the shingle above high-water mark between Lytham and St. Anne's-on-the-Sea. It flew only a few yards, so I put it up again,—in fact, four times in all. When flying, the red on the lower part of the back and tail, and the white patches on the wings, were very conspicuous.—F. BROWNSWORD (St. Anne's-on-the-Sea, Lancashire).

Puffin Inland in Notts.—*A propos* to my notes, in the last volume of 'The Zoologist,' on the occurrences of the Little Auk and Manx Shearwater in Notts, I may state that a Puffin, *Fratercula arctica*, was obtained at Bottamsall, in this county, in the autumn of 1889.—L. BUTTRESS (Grove, near Retford, Notts).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

Jan. 21, 1892.—Prof. STEWART, President, in the chair.

Messrs. B. J. Austin, Stanley Edwards, and F. Turner were elected Fellows of the Society, and Mr. T. J. Moore, of Liverpool, an Associate.

On a motion by the President, it was unanimously resolved that an expression of respectful sympathy should be conveyed to Her Majesty the Queen, and to H.R.H. the Prince of Wales, on the loss sustained by the death of H.R.H. the late Duke of Clarence and Avondale.

Mr. M. F. Woodward exhibited microscopic sections illustrating the development of the teeth in the Marsupialia. He drew attention to Prof. Kükenthal's recent discovery of supposed rudimentary successors in all the teeth, thus showing that the adult set of teeth must be regarded as belonging to the first or milk series, and not, as generally supposed, to the second or successional dentition. These statements he was able to confirm for the incisors and second upper molar of *Didelphys*. In the Phalanger (*Trichosaurus*) he found no trace of these structures in connection with the

molar teeth, but they were present in the upper incisors. In no case did these rudimentary successional teeth pass beyond the condition of simple downgrowths from the enamel organs of the functional teeth.

Mr. J. W. Willis Bund exhibited a supposed hybrid between the Common and Red-legged Partridges; but in the opinion of ornithologists present it was merely a variety of the former species.

Mr. J. C. Mansel Pleydell exhibited a pair of malformed horns of the Roebuck, found at Whatcombe, Blandford, Dorset, their peculiar growth resulting from exostosis consequent upon injury sustained while in the sensitive condition. They resembled those figured in 'The Zoologist' for 1884, p. 364.

Mr. D. Morris communicated some further notes upon the Tick-pest of Jamaica, upon which an animated discussion took place.

A paper was then read by Mr. F. E. Weiss, "On the development of Caoutchouc-containing cells of *Eucommia ulmoides*, Oliver." He found that the bark and leaves of this tree, used medicinally by the Chinese, and called by them "Tu-chung," contain numerous elastic threads of silky appearance, which proved to be of the nature of Caoutchouc. They are contained in long unbranching cells, somewhat like latex cells which are found in the cortex and in the secondary phloem, and accompany in large numbers the ramifying bundles of the leaf and the pericarp. Unlike the ordinary latex cells, they are not derived from specialized cells of the embryo, but originate in all new growths, and can be seen forming in the cortex, the pith and ~~the~~ parenchyma surrounding the bundle of the petioles. They originate in twos, by longitudinal division of a very granular cell, both daughter cells growing out at their two extremities into a long tube which makes its way along the intercellular spaces by sliding growth. They never contain more than one nucleus, and the large granules of caoutchouc, which soon make their appearance, finally coalesce into a single solid mass, which has, when the tissues are broken, the appearance of a silky thread. Mr. Weiss regards these cells as a primitive form of latex cells, similar to those from which the more elaborate ones of the ordinary *Euphorbiaceæ* may have been derived.

The meeting was brought to a close with a paper by Dr. Jean Müller on the Lichens of Manipur.

February 4.—Prof. STEWART, President, in the chair.

A letter was read from General Sir Dighton Probyn, conveying the thanks of the Prince and Princess of Wales for the expression of condolence with their Royal Highnesses in their severe bereavement; which had been forwarded by the President on behalf of the Society. A similar acknowledgment on behalf of Her Majesty the Queen was subsequently received from the Home Secretary.

Mr. John Rattray was elected and Mr. W. H. Blaber was admitted a Fellow of the Society.

Mr. J. E. Harting exhibited Gould's coloured plate of a Humming-bird, *Phaethornis longuemareus*, of which species a pair had made their nest in the drawing-room of Mr. Hamilton, of Queen's Park, Trinidad. The nest was built in a palm about five feet high, standing in a tub within the room. The first egg was laid on the 27th December last, the second on Dec. 29th, and a young bird was hatched on Jan. 12th. The circumstance was regarded as quite unprecedented, though Mr. D. Morris was able to quote a case, which came under his own observation in Jamaica, wherein a Hummingbird built its nest on the extremity of a saddle-bar in a verandah. Full details are given in 'The Field' of Feb. 20th.

Mr. Harting also exhibited some photographs of the egg-cases of two species of Dogfish (*Scyllium*), and made some remarks on the mode of deposition and period of incubation as observed in different aquaria.

Mr. F. N. Williams read a paper on the genus *Dianthus*. He pointed out that *Velezia*, *Dianthus*, and *Funica* form a natural group of genera distinguishable from the Silene group by their seeds, which have a facial hylum and straight embryo. *Velezia* may be distinguished from *Dianthus* and *Funica* by having half the number of stamens. There are, however, three characters to be relied on in distinguishing these two genera:—(1) the presence of an epicalyx of bracts; (2) the number of nerves to the calyx; (3) the junction of the claw with the blade of the petal. This last character was regarded as distinguishing very clearly *Dianthus* from *Funica*. In *Dianthus* the blade of the petal is abruptly narrowed into the claw, so that the two are distinct; in *Funica* the transition is gradual. Mr. Williams was of opinion that the species of *Dianthus* might be arranged in three natural groups (subgenera):—(1) in which the flowers are numerous and clustered as in "Sweet-william"; (2) the largest group in which the flowers are few and usually solitary on the branches of the stems, as in Carnation; and (3) a small group intermediate between *Funica* and the true Pinks, and corresponding with the genus *Kohlruschia* of Kunth. The number of species recognised by Mr. Williams in this monograph amount, in round number, to 250.

A paper, by Messrs. G. J. Hinde and Wm. Holmes, was then read, "On the Sponge Remains in the Lower Tertiary Strata near Oamaru, Otago, New Zealand." Near Oamaru there are beds of white, friable siliceous rock of upper Eocene age, almost entirely composed of sponge spicules, diatoms, and radiolaria, thus resembling in character the diatom and radiolarian ooze of the present deep seas. The sponge remains are all detached; they belong largely to the *Monactinellidae*, though *Tetractinellid*, *Lithistid*, and *Hexactinellid* spicules are also present. The smaller flesh spicules of these different groups are perfectly preserved,

and thus enable a comparison to be made with existing sponges to which generically they mostly belong. In all 43 genera and 113 species have been recognized by their characteristic spicules. Many of the forms have not hitherto been known as fossil. The existing relatives of many of them now inhabit the Indian and Southern Oceans, but some are at present only known from the North Atlantic. The remains of deep-water sponges are intermingled in the deposit with others hitherto supposed to belong to moderate depths only, but in recent dredgings by H.M.S. 'Egeria' off the S.W. coast of Australia, at a depth of 3000 fathoms, there is a corresponding admixture of similar spicules.

ZOOLOGICAL SOCIETY OF LONDON.

Feb. 2, 1892.—W. T. BLANFORD, Esq., F.R.S., F.Z.S., in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of January.

Mr. W. Bateson exhibited some crabs' claws bearing supernumerary prongs. It was shown that these extra parts are really complementary (right and left) pairs of indices or pollices, according to their position of origin, and not repetitions of the two pincers of the claw, as was commonly believed.

Mr. Sclater made some remarks on the breeding of the Ground-Pigeons (*Geophapes*) in the Society's Gardens, and showed that the young of these pigeons, when first hatched, were not materially different in point of development from those of the typical pigeons, and that there was consequently no ground for separating the *Geophapes* from the order *Columbae* on this account, as it had been recently proposed to do.

A letter was read from Prof. R. Ramsay Wright, enclosing some photographs of the heaps of skulls of the American Bison which are collected on the plains of the Saskatchewan, and piled up at the sidings on the Canadian Pacific Railway, awaiting transport, and which testify to the enormous number of these animals recently exterminated.

Mr. W. Bateson gave a summary of his recent observations on numerical variation in teeth. The facts given related chiefly to specimens of Quadrupeds, Carnivora, Marsupials, and other orders of Mammals in the British and other Museums. The author pointed out that the ordinarily received view of homologies between teeth is based on the hypothesis that the series is composed of members each of which is either present or absent. In the light of the facts of variation, this hypothesis was shown to be untenable, and an attempt was made to arrive at a more just conception of the nature of the homology of multiple parts.

Mr. R. Lydekker described part of the upper jaw of a Sirenian Mammal from the Tertiaries of Northern Italy, containing milk-teeth. As these teeth

showed a marked Selenodont structure, it was urged that the specimen indicated the descent of the Sirenia from Selenodont Artiodactile Ungulates. It was incidentally shown that *Halitherium veronense*, Zigno, from the same deposits, belongs to *Prorastomus*, Owen.

A communication was read from the Rev. H. S. Gorham, containing descriptions of, and notes on, the Coleoptera collected by Mr. John Whitehead on Kina Balu, Borneo. The present communication related to the families *Hispidæ*, *Erotylidæ*, *Endomychidæ*, *Lycidæ*, *Lampyridæ*, and others.

Another communication from the Rev. H. S. Gorham and Mr. C. J. Gahan gave an account of some of the Coleoptera collected by Mr. W. Bonny in the Aruwimi Valley, Central Africa.

Mr. Sclater read some notes on a small collection of Mammals brought by Mr. Alfred Sharpe from Nyassaland, amongst which was a flat skin of Angas's Bush-bok, *Tragelaphus angasi*, a species of Antelope not hitherto recorded to occur in this district. He also gave the description of a new Antelope from Somali-land, proposed to be called *Bubalis swaynii*, after Capt. H. G. C. Swayne, R.E., who had furnished him with the specimens on which it is based. He likewise exhibited and remarked on some other examples of Antelopes from the same country contained in Capt. Swayne's collection.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

Feb. 10, 1892.—Mr. FREDERICK DUCANE GODMAN, F.R.S., President, in the chair.

The President nominated Lord Walsingham, LL.D., F.R.S., Mr. Henry John Elwes, F.L.S., and Dr. D. Sharp, M.A., F.R.S., Vice-Presidents for the session 1892–93.

Mr. Thomas W. Cowan, F.L.S., F.G.S., of 31, Belsize Park Gardens, Hampstead, N.W.; Mr. Wm. Farren, of Union Road, Cambridge; Mr. Philip de la Garde, R.N., of H.M.S. 'Pembroke,' Chatham; the Rev. J. A. Mackonochie, B.A., of St. Botolph's, Lincoln; and the Rev. A. Thornley, M.A., of South Leverton Vicarage, Lincolnshire, were elected Fellows of the Society; and Mr. Henry A. Hill and Major H. Murray were admitted into the Society.

Mr. E. Meyrick exhibited a number of specimens of *Euproctis fulviceps*, Walk., taken by Mr. Barnard, showing the extraordinary variation of this Tasmanian species, all the males of which had been "sembled" by one female. The males were represented by various forms ranging from black to white, which had all been described as distinct species. Dr. Sharp, Mr. Hampson, Mr. McLachlan, Colonel Swinhoe, Mr. Elwes, Mr. Tutt, Mr. Poulton, and Mr. Jacoby took part in the discussion which ensued.

Dr. Sharp exhibited samples of pins which he had tried for preventing verdigris, and stated that silver wire was the best material to use, as insects on silver pins remained intact, whilst those on gilt pins were destroyed by verdigris.

Mr. G. T. Porritt exhibited a series of specimens representing Huddersfield forms of *Polia chi*, including nearly melanic specimens, found there during the last two seasons. He said these forms had not hitherto been observed elsewhere.

Mr. Tutt exhibited a series of *Hadena pisi*, comprising specimens very grey in tint, others of an almost unicolorous red with but faint markings, and others well marked with ochreous transverse lines. Three distinct forms of *Hadena dissimilis*; red and grey forms of *Panolis piniperda*, and a dark form of *Eupithecia fraxinata*; also a specimen of *Sciaphila penziana*. With the exception of the last-named, which was taken in Anglesey, all the specimens were taken or bred by Mr. Tunstall in the neighbourhood of Warrington.

The Rev. Dr. Walker exhibited specimens of *Arge titea*, *A. lachesis*, *A. psyche*, *A. thetis*, and other species of the genus from the neighbourhood of Athens; also specimens of *Argynnis phaebe*, taken in Grenada in May, 1891.

Mr. W. Farren exhibited a series of specimens of *Peronea variegana* var. *cirrana*, and *P. schalleriana* var. *latifasciana*, from Scarborough; *Eupaecilia vectisana*, from Wicken Fen; and *Elachista subocellea*, from Cambridge.

Mr. G. A. J. Rothney sent for exhibition a number of species of ants collected by himself in Australia, in May and June, 1886, which had recently been named for him by Dr. Forel. The collection included:—*Iridomyrmex purpurens*, Sm., *I. rufoniger*, Lowne, *I. gracilis*, Lowne, *I. itienerans*, Lowne, *Ectatomma metallicum*, Sm., *E. nudatum*, *E. mayri*, *Aphaenogaster longiceps*, Sm., *Polyrhachis ammon*, Fab., *Myrmecia nigiventris*, Mayr, and *nigrocincta*, Sm.; *Leptomyrmex erythrocephalus*, Fab., and a variety of *Camponotus rubiginosus*, Mayr, from Brisbane; also a few species from Honolulu, and a species of *Monomorium*, which Dr. Forel had not yet determined, and which he believed to be probably new.

Mr. C. O. Waterhouse read a paper entitled "Some Observations on the Mouth Organs of Diptera," which was illustrated by numerous diagrams. A long discussion ensued in which Mr. Champion, Mr. McLachlan, Mr. Jenner Weir, Mr. Slater, Mr. Poulton, Mr. Distant, Dr. Sharp, Mr. Hampson, Mr. Elwes, and Mr. Barrett took part.

Mr. E. Meyrick read a paper entitled "On the Classification of the Geometrina of the European Fauna." Mr. Hampson, Mr. Elwes, Mr. McLachlan, Colonel Swinhoe, Mr. Tutt, and Mr. Distant took part in the discussion which ensued.—H. Goss, Hon. Secretary.

